

AMENDMENTS TO THE SPECIFICATION:

Please delete the title in toto on page 14.

Please delete the Abstract on page 14 in toto and replace with the following new Abstract:

Abstract

A method for the operation of a panel placement system for punching presses wherein a feed slide is moved between the punching die of the punching press and a transfer position located in front of the punching press. A first connection mechanism of the feed slide, in the transfer position, seizes a panel in the rear area to advance it stepwise through the punching press in response to the cycle of said punching press, wherein the panel is gripped exclusively from above in a rear edge area which is located between the rear edge and the surfaces to be punched out.

Please add the following heading on page 1, after the title, as follows:

FIELD OF THE INVENTION

Please replace the first paragraph on page 1 with the following amended paragraph:

The invention relates to a method for the operation of a panel placement system for punching presses ~~according to the preamble of claim 1.~~

Please add the following title on page 1 before the second paragraph, as follows:

BACKGROUND OF THE INVENTION

Please replace the first paragraph on page 2 with the following amended paragraph:

During the last stroke of the known placement system, one of the two parts of feed pliers is directly at one of the outer dies. If it is to be ensured that the upper edge of the lower gripper mouth defines a plane with the die ring to prevent the panel from being pulled down during the last stroke the pliers are in a specifically formed pocket of the lower die ring when cutting diameters are small (<100 mm). The panel which is newly to be introduced has to be passed through under the feed pliers. However, this can be accomplished only after the pliers are moved back a

sufficient length to leave enough space for the panel which is moving in. The front edge of the panel which is newly to be introduced has to be raised to the level of the die ring. Even if pockets do not require to be provided in the die rings when cutting diameters are larger it is then difficult for thicker metal sheets to get through between the pliers and the die ring. The gap between the pliers and the die ring can also be released by raising the pliers. However, this procedure takes time. Also, a panel placement system is known in which the gripping pliers engage the rear panel edge. Also in this ~~constellation~~ configuration, however, the gripping pliers will be at ~~an~~ a position identical to a die ring as in the previously described system during the last stroke. A more precise look during the engagement effected on the rear edge reveals, however, that if there is a diagonal feed only the pushing pliers act during a change of row. This results in a start of acceleration only at certain points and causes a diagonal formation of waves which takes a very long time to pass through the entire panel. Not until the panel lies in a flat condition again is precise punching ~~is~~ possible. A dynamic operation is no longer possible from the moment at which the undulatory motion begins. The problem specifically occurs at the start of panel machining when the panel still has its full size and the distance of the pliers from the die is minimal.

Please add the following title on page 3 before the third paragraph, as follows:

SUMMARY OF THE INVENTION

Please replace the third paragraph on page 3 with the following amended paragraph:

It is ~~the~~ an object of the invention to provide a method for the operation of a panel placement system for punching presses which avoids any idle stroke while having a high press speed, ~~allows to guide~~ allowing the panel to be guided in a stable fashion, and ~~permits~~ permitting operation with nearly no wear.

Please delete the fourth paragraph on page 3, in its entirety.

Please replace the fifth paragraph on page 3 with the following amended paragraph:

~~In the invention method,~~ The method of the present invention is achieved by the steps in which first connection means of the feed motion seize the panel exclusively from above in a rear edge area which is located between the rear edge and the surfaces to be punched out. What is understood by the surfaces to be punched out here is the final row of the surfaces to be punched out, based on the direction of feed.

Please replace the first paragraph on page 4 with the following amended paragraph:

Seizing the rear edge area via a vacuum and/or electromagnetically causes a frictional fit between the connection means and the panel. To improve the possibility for a work drive, an aspect of the invention provides that the connection means seize the panel by means of pointed projections which penetrate into the rear edge area of the panel when the connection means seize the edge area. This establishes a positive fit between the connection means and the panel.

Please replace the second paragraph on page 4 with the following amended paragraph:

The projections of the first connection means can be formed by pin-like spikes which penetrate into the panel, in which the spikes can be disposed within suction ports of vacuum nozzles, according to an aspect of the invention. At the moment the panel is pressed against the nozzle, a spike of the nozzle penetrates into the panel either fully or partially. Even if the steel was cold-rolled twice, the spikes can penetrate through a panel which is 0.18 mm thick, for example.

Please replace the first paragraph on page 5 with the following amended paragraph:

~~The~~ A further advantage of the invention is that a panel, while undergoing the final punching cut, is not pulled around, but the preceding panel can be pulled out rearwards instead and a fresh panel can be readily pushed in by a feed slide underneath.

Please replace the fourth paragraph on page 5 with the following amended paragraph:

Another advantage of the invention is that better guidance is possible because of the way the panel is seized, specifically when the panel is large and thin. While the panel is fixed according to the invention, the force can be introduced across the entire panel width and undulatory motions or the like can be avoided during a dynamic operation. This makes possible considerably larger accelerations and higher performances.

Please replace the fifth paragraph on page 5 with the following amended paragraph:

Finally, this obtains the advantage that if the panel is seized according to the invention, the stability of the remaining grid is distinctly higher than in known methods. It avoids dimensional variations which can occur because of the collapse of the grid pieces which are left behind.

Please add the following title on page 6 before the second paragraph, as follows:

BRIEF DESCRIPTION OF THE DRAWINGS

Please replace the second paragraph on page 6 with the following amended paragraph:

Fig. 1 shows a plan view of a schematically shown panel placement system including means of the invention during the transfer from an advancement slide to a feed device[[.]];;

Please replace the third paragraph on page 6 with the following amended paragraph:

Fig. 2 shows a representation similar to Fig. 1 with a panel after the end of machining [[.]];;

Please replace the fourth paragraph on page 6 with the following amended paragraph:

Fig. 3 shows a section taken through the representation of Fig. 1 along the lines 3-3[[.]];;

Please replace the fifth paragraph on page 6 with the following amended paragraph:

Fig. 4 shows the view [[4]] taken in the direction 4 of Fig. 1; and

Please replace the sixth paragraph on page 6, with the following rewritten paragraph as follows:

Fig. 5 shows the view [[4]] taken in the direction 5 of Fig. 2.

Please add the following title on page 6 before the seventh paragraph, as follows:

DETAILED DESCRIPTION

Please replace the seventh paragraph on page 6 with the following amended paragraph:

In Figures 1 and 2, a punching press of a conventional design type is designated by 10. ~~It~~ The punching press has three punching dies 12 which are moved perpendicularly to the plane of the drawing by means of a ram. A feed slide 16 is adjustable along a guideway 18 in the direction of the two-ended arrow 20. The feed slide 16 has holders 22, 24 for a gripper ledge 25 as a first connection means. Reference to the structure of the ledges 25 will be made later. The slide 16 and the holders 22, 24 are actuated by appropriate adjustable drives which are not shown and, in turn, are controlled by a suitable control device.

Please replace the second paragraph on page 7 with the following amended paragraph:

As can be recognized from Figures 1 and 2, the contour of the ledge 25 is such that it engages the gores by portions which are formed between the surfaces to be punched out in the respective rear row and the rear edge. The ledge 25 is always above the panel 40a and 40. It is shown in cross-section in Figures 4 and 5.

Please replace the fourth paragraph on page 7 with the following amended paragraph:

A pin-like spike 56 is centrally disposed in the recess 50. When the panel 40 or 40a is held against the ledge 25, the spike 56 will penetrate into the material of the

panel 40a or 40 so that the panel is also held in a positive fit. In this manner, it is possible to advance the panel 40a or 40 to the press 10 as desired.

Please replace the fifth paragraph on page 7 with the following amended paragraph:

The ledge 25 can have a plurality of such connections means, as shown in Figures 4 and 5, in order to seize the panel 40a or 40 across the large width.

Please replace the seventh paragraph on page 7 with the following amended paragraph:

Fig. 2 shows a panel 40 to be machined at a position in which the final punching step is performed. Once the punching dies 12 are in engagement with the panel 40, the ledge 25 can be brought out of engagement with the panel or the grid which has remained, e.g. by a change-over from the vacuum to compressed air. The feed slide 16 runs back to a transfer position as is shown in Fig. 1. The gripping pliers 32, 34 have seized a fresh panel already during this time. When the ledge 25 has reached its position along the transverse axis 21, the pick-up position on this axis is reached as well. Thus, while the advancement slide 30 advances the fresh panel 40a along the longitudinal axis 20 towards the punching press 10, the ledge 25 will move because of the return motion of the feed slide 16 and, thus, the panel 40a can be smoothly advanced into the press 10. The transfer position corresponds to that position in which the punching dies 12 carry out the first cut. The advancement slide 30 can smoothly advance the succeeding panel below the machined panel as results from Figures 4 and 5. They allow ~~to see~~ the table top 60 on which the panel is advanced to be seen. Once the panel has reached the transfer position of Fig. 4 (panel 40a), it is raised against the underside of the ledge 25 by means of at least one lifting plunger 62 which is actuated by a lifting drive, which is not shown, in the direction of the double-ended arrow 64 so that the spike 56 can penetrate through the panel 40a. The plunger 62 is extended through an opening 66 of the table top and is shifted back to the initial position immediately after the lift. Now, the feed slide 16 can advance the panel to the punching press in the manner described until the final

cut is made, as shown in Fig. 5. Fig. 5 shows a male die 68 and a female die 70 of the punching dies 12. The underside of the ledge 25 exactly corresponds to the cutting plane of the dies 68, 70.

Please replace the second paragraph on page 8 with the following amended paragraph:

At the moment at which the punching dies 68, 70 make cuts into the panel 40 while fixing it at the same time, the gripping pliers 32, 34 are opened and the plunger 62 lifts the panel 40a against the ledge 25 (Fig. 4), thus causing the transfer to take place from the advancement slide 30 to the feed slide 60.

Please replace the third paragraph on page 8 with the following amended paragraph:

The principle shown allows ~~to bring about~~ the feed of the panels to be brought about with no idle strokes of the punching press. The panels 40 and 40a are safely seized by the ledge 25 using the connection means shown so that deformations of the panels that are caused by the feed motions will not occur. Since the panels are seized across a wide surface within the rear edge area, the remaining grid will be stabilized also during the final punching step.